



Patent Application  
4121-136

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

<b>In re United States Patent Application of:</b>	)	<b>Docket No.:</b>	<b>4121-136</b>
<b>Applicant:</b>	)	<b>Confirmation No.:</b>	<b>9054</b>
<b>Application No.:</b>	)	<b>Examiner:</b>	<b>Not yet assigned</b>
<b>Date Filed:</b>	)	<b>Group Art Unit:</b>	<b>Not yet assigned</b>
<b>Title:</b>	)	<b>Customer No.:</b>	<b>23448</b>



**23448**

PATENT TRADEMARK OFFICE

**FEDERAL EXPRESS CERTIFICATE**

I hereby certify that I am forwarding this document, sequence listing and disk to the U.S. Patent and Trademark Office on the date specified, in an envelope addressed to 2011 South Clark Place, Customer Window, Box Sequence, Crystal Plaza Two, Lobby, Room 1B03, Arlington, VA 22202 via Federal Express Courier.

  
L. Stephen Lockett

February 28, 2003  
Date of Mailing

7902 1787 8854

Federal Express Label Number

**STATEMENT OF IDENTITY UNDER 37 C.F.R. §1.821 (f)**

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Arlington, VA 22202

Sir:

I hereby state that I have prepared the paper copy of the document titled "Sequence Listing\_resubmit.ST25" and recorded such document on computer readable form on February 27, 2003, and that information recorded in computer readable form is identical to that on the paper copy of sequence listing submitted.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Marianne Fuierer", written in dark ink.

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Marianne Fuierer

Reg. No. 39,983

Attorney for Applicants

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TECHNOLOGY LAW**  
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Research Triangle Park, NC 27709  
Telephone: (919) 419-9350  
Fax: (919) 419-9354  
**Attorney Ref: 4121-136**

Sequence Listing\_resubmit.ST25  
SEQUENCE LISTING

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Rommelaere, Jean

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<120> Parvovirus NS 1 Variants

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<140> 10/069,056

<141> 2002-02-11

<150> PCT/EP00/07835

<151> 2000-08-11

<150> EP 99 115 161.4

<151> 1999-08-13

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<170> PatentIn version 3.2

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Val Ile Met Thr Thr Asn Glu Asn Ile Thr Val Val Arg Ile Gly Cys  
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Ile His Leu Thr His His Leu Pro Gly Asp Phe Gly Leu Val Asp Lys  
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Page 17

Sequence Listing\_resubmit.ST25

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Thr Thr Trp Asp Gln Ser Glu Asp Met Glu Trp Glu Thr Thr Val Asp  
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Glu Met Thr Lys Lys Gln Val Phe Ile Phe Asp Ser Leu Val Lys Lys  
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Cys Leu Phe Glu Val Leu Asn Thr Lys Asn Ile Phe Pro Gly Asp Val  
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Asn Trp Phe Val Gln His Glu Trp Gly Lys Asp Gln Gly Trp His Cys  
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Trp Arg Arg Gln Leu Asn Val Tyr Trp Ser Arg Trp Leu Val Thr Ala  
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Asp Cys Thr Asn Lys Asn Leu Ile Trp Val Glu Glu Ala Gly Asn Phe  
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Arg Ile Asp Gln Lys Gly Lys Gly Ser Lys Gln Ile Glu Pro Thr Pro  
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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re United States Patent Application of: )

Applicant: Nuesch, et al. )

Docket No.: 4121-136 )

Application No.: 10/069,056 )

Examiner: Not yet assigned. )

Date Filed: February 11, 2002 )

Group Art Unit: Not yet assigned. )

Title: PARVOVIRUS NS 1 VARIANTS )



23448

PATENT & TRADEMARK OFFICE

**EXPRESS MAIL CERTIFICATE**

It hereby is certified by the person identified below that the attached documents are being mailed to the Commissioner of Patents on the date specified, in an envelope addressed to the Commissioner of Patents, Box PCT, Washington, D.C. 20231, and Express Mailed under the provisions of 37CFR 1.10.

Katrina Holland

June 20, 2002

Date of Mailing

EL544952114US

Express Mail Label Number

**STATEMENT OF IDENTITY UNDER 27 C.F.R. §1.821 (f)**

Commissioner for Patents

Box PCT

Washington, D.C. 20231

Sir:

I hereby state that I have prepared the paper copy of the document titled "SEQUENCE LISTING.st25.txt" and recorded such document on computer readable form on June 14, 2002, and that information recorded in computer readable form is identical to that on the paper copy of sequence listing submitted.

Respectfully submitted,

Marianne Fuierer

Reg. No. 39,983

Attorney for Applicants

INTELLECTUAL PROPERTY/  
TECHNOLOGY LAW  
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Research Triangle Park, NC 27709  
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Fax: (919) 419-9354  
Attorney Ref: 4121-136



## SEQUENCE LISTING

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Rommelaere, Jean

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35          40          45

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```

Lys Glu Leu Gln Glu Asp Glu Leu Lys Ser Leu Gln Arg Gly Ala Glu
50          55          60

```

```

Thr Thr Trp Asp Gln Ser Glu Asp Met Glu Trp Glu Thr Thr Val Asp
65          70          75          80

```

```

Glu Met Thr Lys Lys Gln Val Phe Ile Phe Asp Ser Leu Val Lys Lys
85          90          95

```

```

Cys Leu Phe Glu Val Leu Asn Thr Lys Asn Ile Phe Pro Gly Asp Val
100         105         110

```

```

Asn Trp Phe Val Gln His Glu Trp Gly Lys Asp Gln Gly Trp His Cys
115         120         125

```

```

His Val Leu Ile Gly Gly Lys Asp Phe Ser Gln Ala Gln Gly Lys Trp
130         135         140

```

Trp Arg Arg Gln Leu Asn Val Tyr Trp Ser Arg Trp Leu Val Thr Ala  
145 150 155 160

Cys Asn Val Gln Leu Thr Pro Ala Glu Arg Ile Lys Leu Arg Glu Ile  
165 170 175

Ala Glu Asp Asn Glu Trp Val Thr Leu Leu Thr Tyr Lys His Lys Gln  
180 185 190

Thr Lys Lys Asp Tyr Thr Lys Cys Val Leu Phe Gly Asn Met Ile Ala  
195 200 205

Tyr Tyr Phe Leu Thr Lys Lys Lys Ile Ser Thr Ser Pro Pro Arg Asp  
210 215 220

Gly Gly Tyr Phe Leu Ser Ser Asp Ser Gly Trp Lys Thr Asn Phe Leu  
225 230 235 240

Lys Glu Gly Glu Arg His Leu Val Ser Lys Leu Tyr Thr Asp Asp Met  
245 250 255

Arg Pro Glu Thr Val Glu Thr Thr Val Thr Thr Ala Gln Glu Thr Lys  
260 265 270

Arg Gly Arg Ile Gln Thr Lys Lys Glu Val Ser Ile Lys Thr Thr Leu  
275 280 285

Lys Glu Leu Val His Lys Arg Val Thr Ser Pro Glu Asp Trp Met Met  
290 295 300

Met Gln Pro Asp Ser Tyr Ile Glu Met Met Ala Gln Pro Gly Gly Glu  
305 310 315 320

Asn Leu Leu Lys Asn Thr Leu Glu Ile Cys Thr Leu Thr Leu Ala Arg  
325 330 335

Thr Lys Thr Ala Phe Asp Leu Ile Leu Glu Lys Ala Glu Thr Ser Lys  
340 345 350

Leu Thr Asn Phe Ser Leu Pro Asp Thr Arg Thr Cys Arg Ile Phe Ala  
355 360 365

Phe His Gly Trp Asn Tyr Val Lys Val Cys His Ala Ile Cys Cys Val  
370 375 380

Leu Asn Arg Gln Gly Gly Lys Arg Asn Thr Val Leu Phe His Gly Pro  
385 390 395 400

Ala Ser Thr Gly Lys Ser Ile Ile Ala Gln Ala Ile Ala Gln Ala Val  
405 410 415

Gly Asn Val Gly Cys Tyr Asn Ala Ala Asn Val Asn Phe Pro Phe Asn  
 420 425 430

~~Asp Cys Thr Asn Lys Asn Leu Ile Trp Val Glu Glu Ala Gly Asn Phe~~  
~~435 440 445~~

Gly Gln Gln Val Asn Gln Phe Lys Ala Ile Cys Ser Gly Gln Thr Ile  
 450 455 460

Arg Ile Asp Gln Lys Gly Lys Gly Ser Lys Gln Ile Glu Pro Thr Pro  
 465 470 475 480

Val Ile Met Thr Thr Asn Glu Asn Ile Thr Val Val Arg Ile Gly Cys  
 485 490 495

Glu Glu Arg Pro Glu His Thr Gln Pro Ile Arg Asp Arg Met Leu Asn  
 500 505 510

Ile His Leu Thr His His Leu Pro Gly Asp Phe Gly Leu Val Asp Lys  
 515 520 525

Asn Glu Trp Pro Met Ile Cys Ala Trp Leu Val Lys Asn Gly Tyr Gln  
 530 535 540

Ser Thr Met Ala Ser Tyr Cys Ala Lys Trp Gly Lys Val Pro Asp Trp  
 545 550 555 560

Ser Glu Asn Trp Ala Glu Pro Lys Val Pro Thr Pro Ile Asn Leu Leu  
 565 570 575

Gly Ser Ala Arg Ser Pro Phe Thr Thr Pro Lys Ser Thr Pro Leu Ser  
 580 585 590

Gln Asn Tyr Ala Leu Thr Pro Leu Ala Ser Asp Leu Glu Asp Leu Ala  
 595 600 605

Leu Glu Pro Trp Ser Thr Pro Asn Thr Pro Val Ala Gly Thr Ala Glu  
 610 615 620

Thr Gln Asn Thr Gly Glu Ala Gly Ser Lys Ala Cys Gln Asp Gly Gln  
 625 630 635 640

Leu Ser Pro Thr Trp Ser Glu Ile Glu Glu Asp Leu Arg Ala Cys Phe  
 645 650 655

Gly Ala Glu Pro Leu Lys Lys Asp Phe Ser Glu Pro Leu Asn Leu Asp  
 660 665 670

<210> 3  
 <211> 60  
 <212> DNA  
 <213> Part of Parvovirus NS1 Variant

<400> 3  
gaagttgcta ttaaaactac acttaaagag ctggtgcata aaagagtaac ctcaccagag 60

<210> 4  
<211> 2019  
<212> DNA  
<213> Parvovirus NS1 Variant

<400> 4  
atggctggaa atgcttactc tgatgaagtt ttgggagcaa ccaactgggt aaaggaaaaa 60  
agtaaccagg aagtgttctc atttgttttt aaaaatgaaa atgttcaact gaatggaaaa 120  
gatatcggat ggaatagtta caaaaagag ctgcaggagg acgagctgaa atctttacaa 180  
cgaggagcgg aaactacttg ggaccaaagc gaggacatgg aatgggaaac cacagtggat 240  
gaaatgacca aaaagcaagt attcattttt gattcttttg ttaaaaaatg tttatttgaa 300  
gtgcttaaca caagaatat atttcctggt gatgttaatt ggtttgca acatgaatgg 360  
ggaaaagacc aaggctggca ctgccatgta ctaattggag gaaaggactt tagtcaagct 420  
caagggaat ggtggagaag gcaactaaat gtttactgga gcagatgggt ggtaacagcc 480  
tgtaatgtgc aactaacacc agctgaaaga attaaactaa gagaaatagc agaagacaat 540  
gagtgggtta ctctacttac ttataagcat aagcaaacca aaaaagacta taccaagtgt 600  
gttctttttg gaaacatgat tgcttactat tttttaacta aaaagaaaat aagcactagt 660  
ccaccaagag acggaggcta ttttcttagc agtgactctg gctggaaaac taacttttta 720  
aaagaaggcg agcgccatct agtgagcaaa ctatacactg atgacatgcg gccagaaacg 780  
gttgaaacca cagtaaccac tgcgcaggaa actaagcgcg gcagaattca aactaaaaaa 840  
gaagttgcta ttaaaactac acttaaagag ctggtgcata aaagagtaac ctcaccagag 900  
gactggatga tgatgcagcc agacagttac attgaaatga tggctcaacc aggtggagaa 960  
aacctgctga aaaatacgct agagatttgt aactaactc tagccagaac caaaacagca 1020  
tttgacttaa ttttagaaaa agctgaaacc agcaactaa ccaacttttc actgcctgac 1080  
acaagaacct gcagaatttt tgcttttcat ggctggaact atgttaaagt ttgccatgct 1140  
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gccagcacag gcaaatctat tattgcacaa gccatagcac aagcagttgg caatgttggt 1260  
tgctataatg cagccaatgt aaactttcca tttaatgact gtaccaacaa gaacttgatt 1320  
tgggtagaag aagctggtaa ctttggacag caagtaaacc agtttaaagc catttgctct 1380  
ggtcaaaacta ttcgcattga tcaaaaagga aaaggcagca aacagattga accaacacca 1440  
gtcatcatga ccacaaatga gaacattaca gtggtcagaa taggctgcga agaaagacca 1500  
gaacacactc aaccaatcag agacagaatg cttaacattc atctaacaca taccttgctt 1560  
ggtgactttg gtttggttga caaaaatgaa tggcccatga tttgtgcttg gttggtaaag 1620  
aatggttacc aatctaccat ggcaagctac tgtgctaaat ggggcagagt tcctgattgg 1680  
tcagaaaact gggcggagcc aaaggtgcc aactctataa atttactagg ttcggcacgc 1740

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tcaccattca cgacaccgaa aagtacgcct ctgagccaga actatgcact aactccactt 1800
gcacgcggatc tcgaggacct ggcttttagag ccttggagca caccaaatac tcctgttgcg 1860
ggcactgcag aaacccagaa cactggggaa gctggttcca aagcctgcc aagatggtcaa 1920
ctgagcccaa cttggtcaga gatcgaggag gatttgagag cgtgcttcgg tgcggaaccg 1980
ttgaagaaag acttcagcga gccgctgaac ttggactaa 2019

```

```

<210> 5
<211> 20
<212> PRT
<213> Part of Parvovirus NS1 Variant

```

```
<400> 5
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```

Glu Val Ala Ile Lys Thr Thr Leu Lys Glu Leu Val His Lys Arg Val
1           5           10           15

```

```

Thr Ser Pro Glu
                20

```

```

<210> 6
<211> 672
<212> PRT
<213> Parvovirus NS1 Variant

```

```
<400> 6
```

```

Met Ala Gly Asn Ala Tyr Ser Asp Glu Val Leu Gly Ala Thr Asn Trp
1           5           10           15

```

```

Leu Lys Glu Lys Ser Asn Gln Glu Val Phe Ser Phe Val Phe Lys Asn
20           25           30

```

```

Glu Asn Val Gln Leu Asn Gly Lys Asp Ile Gly Trp Asn Ser Tyr Lys
35           40           45

```

```

Lys Glu Leu Gln Glu Asp Glu Leu Lys Ser Leu Gln Arg Gly Ala Glu
50           55           60

```

```

Thr Thr Trp Asp Gln Ser Glu Asp Met Glu Trp Glu Thr Thr Val Asp
65           70           75           80

```

```

Glu Met Thr Lys Lys Gln Val Phe Ile Phe Asp Ser Leu Val Lys Lys
85           90           95

```

```

Cys Leu Phe Glu Val Leu Asn Thr Lys Asn Ile Phe Pro Gly Asp Val
100          105          110

```

```

Asn Trp Phe Val Gln His Glu Trp Gly Lys Asp Gln Gly Trp His Cys
115          120          125

```

```

His Val Leu Ile Gly Gly Lys Asp Phe Ser Gln Ala Gln Gly Lys Trp
130          135          140

```

Trp Arg Arg Gln Leu Asn Val Tyr Trp Ser Arg Trp Leu Val Thr Ala  
145 150 155 160

Cys Asn Val Gln Leu Thr Pro Ala Glu Arg Ile Lys Leu Arg Glu Ile  
165 170 175

Ala Glu Asp Asn Glu Trp Val Thr Leu Leu Thr Tyr Lys His Lys Gln  
180 185 190

Thr Lys Lys Asp Tyr Thr Lys Cys Val Leu Phe Gly Asn Met Ile Ala  
195 200 205

Tyr Tyr Phe Leu Thr Lys Lys Lys Ile Ser Thr Ser Pro Pro Arg Asp  
210 215 220

Gly Gly Tyr Phe Leu Ser Ser Asp Ser Gly Trp Lys Thr Asn Phe Leu  
225 230 235 240

Lys Glu Gly Glu Arg His Leu Val Ser Lys Leu Tyr Thr Asp Asp Met  
245 250 255

Arg Pro Glu Thr Val Glu Thr Thr Val Thr Thr Ala Gln Glu Thr Lys  
260 265 270

Arg Gly Arg Ile Gln Thr Lys Lys Glu Val Ala Ile Lys Thr Thr Leu  
275 280 285

Lys Glu Leu Val His Lys Arg Val Thr Ser Pro Glu Asp Trp Met Met  
290 295 300

Met Gln Pro Asp Ser Tyr Ile Glu Met Met Ala Gln Pro Gly Gly Glu  
305 310 315 320

Asn Leu Leu Lys Asn Thr Leu Glu Ile Cys Thr Leu Thr Leu Ala Arg  
325 330 335

Thr Lys Thr Ala Phe Asp Leu Ile Leu Glu Lys Ala Glu Thr Ser Lys  
340 345 350

Leu Thr Asn Phe Ser Leu Pro Asp Thr Arg Thr Cys Arg Ile Phe Ala  
355 360 365

Phe His Gly Trp Asn Tyr Val Lys Val Cys His Ala Ile Cys Cys Val  
370 375 380

Leu Asn Arg Gln Gly Gly Lys Arg Asn Thr Val Leu Phe His Gly Pro  
385 390 395 400

Ala Ser Thr Gly Lys Ser Ile Ile Ala Gln Ala Ile Ala Gln Ala Val  
405 410 415

Gly Asn Val Gly Cys Tyr Asn Ala Ala Asn Val Asn Phe Pro Phe Asn



420                      425                      430  
 Asp Cys Thr Asn Lys Asn Leu Ile Trp Val Glu Glu Ala Gly Asn Phe  
           435                      440                      445  


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 Gly Gln Gln Val Asn Gln Phe Lys Ala Ile Cys Ser Gly Gln Thr Ile  
           450                      455                      460  
 Arg Ile Asp Gln Lys Gly Lys Gly Ser Lys Gln Ile Glu Pro Thr Pro  
           465                      470                      475                      480  
 Val Ile Met Thr Thr Asn Glu Asn Ile Thr Val Val Arg Ile Gly Cys  
                           485                      490                      495  
 Glu Glu Arg Pro Glu His Thr Gln Pro Ile Arg Asp Arg Met Leu Asn  
                           500                      505                      510  
 Ile His Leu Thr His His Leu Pro Gly Asp Phe Gly Leu Val Asp Lys  
                           515                      520                      525  
 Asn Glu Trp Pro Met Ile Cys Ala Trp Leu Val Lys Asn Gly Tyr Gln  
           530                      535                      540  
 Ser Thr Met Ala Ser Tyr Cys Ala Lys Trp Gly Lys Val Pro Asp Trp  
           545                      550                      555                      560  
 Ser Glu Asn Trp Ala Glu Pro Lys Val Pro Thr Pro Ile Asn Leu Leu  
                           565                      570                      575  
 Gly Ser Ala Arg Ser Pro Phe Thr Thr Pro Lys Ser Thr Pro Leu Ser  
                           580                      585                      590  
 Gln Asn Tyr Ala Leu Thr Pro Leu Ala Ser Asp Leu Glu Asp Leu Ala  
                           595                      600                      605  
 Leu Glu Pro Trp Ser Thr Pro Asn Thr Pro Val Ala Gly Thr Ala Glu  
           610                      615                      620  
 Thr Gln Asn Thr Gly Glu Ala Gly Ser Lys Ala Cys Gln Asp Gly Gln  
           625                      630                      635                      640  
 Leu Ser Pro Thr Trp Ser Glu Ile Glu Glu Asp Leu Arg Ala Cys Phe  
                           645                      650                      655  
 Gly Ala Glu Pro Leu Lys Lys Asp Phe Ser Glu Pro Leu Asn Leu Asp  
                           660                      665                      670

<210> 7  
 <211> 60  
 <212> DNA  
 <213> Part of Parvovirus NS1 Variant

<400> 7

acaagagcct gcagaatttt tgcttttcat ggctggaact atgttaaagt ttgccatgct 60

<210> 8

<211> 2019

<212> DNA

<213> Parvovirus NS1 Variant

<400> 8

atggctggaa atgcttactc tgatgaagtt ttgggagcaa ccaactgggt aaaggaaaaa 60  
 agtaaccagg aagtgttctc atttgttttt aaaaatgaaa atgttcaact gaatggaaaa 120  
 gatatcggat ggaatagtta caaaaaagag ctgcaggagg acgagctgaa atctttacaa 180  
 cgaggagcgg aaactacttg ggaccaaagc gaggacatgg aatgggaaac cacagtggat 240  
 gaaatgacca aaaagcaagt attcattttt gattcttttg ttaaaaaatg tttatttgaa 300  
 gtgcttaaca caaagaatat atttcctggt gatgttaatt ggtttggtgca acatgaatgg 360  
 ggaaaagacc aaggctggca ctgccatgta ctaattggag gaaaggactt tagtcaagct 420  
 caagggaaat ggtggagaag gcaactaaat gtttactgga gcagatgggt ggtaacagcc 480  
 tgtaatgtgc aactaacacc agctgaaaga attaaactaa gagaaatagc agaagacaat 540  
 gagtgggtta ctctacttac ttataagcat aagcaaacca aaaaagacta taccaagtgt 600  
 gttctttttg gaaacatgat tgcttactat tttttaacta aaaagaaaat aagcactagt 660  
 ccaccaagag acggaggcta ttttcttagc agtgactctg gctggaaaac taacttttta 720  
 aaagaaggcg agcgccatct agtgagcaaa ctataactg atgacatgcg gccagaaacg 780  
 gttgaaacca cagtaaccac tgcgcaggaa actaagcgcg gcagaattca aactaaaaaa 840  
 gaagtttcta ttaaaactac acttaaagag ctggtgcata aaagagtaac ctcaccagag 900  
 gactggatga tgatgcagcc agacagttac attgaaatga tggctcaacc aggtggagaa 960  
 aacctgtga aaaatacgtc agagatttgt aactaactc tagccagaac caaacagca 1020  
 tttgacttaa ttttagaaaa agctgaaacc agcaactaa ccaacttttc actgcctgac 1080  
 acaagagcct gcagaatttt tgcttttcat ggctggaact atgttaaagt ttgccatgct 1140  
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 gccagcacag gcaaatctat tattgcacaa gccatagcac aagcagttgg caatgttggt 1260  
 tgctataatg cagccaatgt aaactttcca ttaatgact gtaccaacaa gaacttgatt 1320  
 tgggtagaag aagctggtaa ctttggacag caagtaaacc agtttaaagc catttgctct 1380  
 ggtcaaacta ttcgcattga tcaaaaagga aaaggcagca aacagattga accaacacca 1440  
 gtcacatga ccacaaatga gaacattaca gtggtcagaa taggctgcga agaaagacca 1500  
 gaacacactc aaccaatcag agacagaatg cttaacattc atctaacaca taccttgctt 1560  
 ggtgactttg gtttgggtga caaaaatgaa tggcccatga tttgtgcttg gttggtaaag 1620  
 aatggttacc aatctacat ggcaagctac tgtgctaaat ggggcaaagt tcctgattgg 1680  
 tcagaaaact gggcgagacc aaaggtgcc aactctataa atttactagg ttcggcacgc 1740  
 tcaccattca cgacaccgaa aagtacgcct ctgagccaga actatgcact aactccactt 1800

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gcatcggatc tcgaggacct ggcttttagag ccttgaggca caccaaatac tcctgttgcg 1860
ggcactgcag aaaccagaa cactggggaa gctgggtcca aagcctgcc agatgggtcaa 1920
ctgagcccaa cttggtcaga gatcaggag gatttgagag cgtgcttcgg tgcggaaccg 1980
ttgaagaaag acttcagcga gccgctgaac ttgactaa 2019

```

```

<210> 9
<211> 20
<212> PRT
<213> Part of Parvovirus NS1 Variant

```

```
<400> 9
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```

Thr Arg Ala Cys Arg Ile Phe Ala Phe His Gly Trp Asn Tyr Val Lys
1          5          10          15

```

```

Val Cys His Ala
20

```

```

<210> 10
<211> 672
<212> PRT
<213> Parvovirus NS1 Variant

```

```
<400> 10
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```

Met Ala Gly Asn Ala Tyr Ser Asp Glu Val Leu Gly Ala Thr Asn Trp
1          5          10          15

```

```

Leu Lys Glu Lys Ser Asn Gln Glu Val Phe Ser Phe Val Phe Lys Asn
20          25          30

```

```

Glu Asn Val Gln Leu Asn Gly Lys Asp Ile Gly Trp Asn Ser Tyr Lys
35          40          45

```

```

Lys Glu Leu Gln Glu Asp Glu Leu Lys Ser Leu Gln Arg Gly Ala Glu
50          55          60

```

```

Thr Thr Trp Asp Gln Ser Glu Asp Met Glu Trp Glu Thr Thr Val Asp
65          70          75          80

```

```

Glu Met Thr Lys Lys Gln Val Phe Ile Phe Asp Ser Leu Val Lys Lys
85          90          95

```

```

Cys Leu Phe Glu Val Leu Asn Thr Lys Asn Ile Phe Pro Gly Asp Val
100         105         110

```

```

Asn Trp Phe Val Gln His Glu Trp Gly Lys Asp Gln Gly Trp His Cys
115         120         125

```

```

His Val Leu Ile Gly Gly Lys Asp Phe Ser Gln Ala Gln Gly Lys Trp
130         135         140

```

```

Trp Arg Arg Gln Leu Asn Val Tyr Trp Ser Arg Trp Leu Val Thr Ala
145         150         155         160

```

Cys Asn Val Gln Leu Thr Pro Ala Glu Arg Ile Lys Leu Arg Glu Ile  
 165 170 175

Ala Glu Asp Asn Glu Trp Val Thr Leu Leu Thr Tyr Lys His Lys Gln  
 180 185 190

Thr Lys Lys Asp Tyr Thr Lys Cys Val Leu Phe Gly Asn Met Ile Ala  
 195 200 205

Tyr Tyr Phe Leu Thr Lys Lys Lys Ile Ser Thr Ser Pro Pro Arg Asp  
 210 215 220

Gly Gly Tyr Phe Leu Ser Ser Asp Ser Gly Trp Lys Thr Asn Phe Leu  
 225 230 235 240

Lys Glu Gly Glu Arg His Leu Val Ser Lys Leu Tyr Thr Asp Asp Met  
 245 250 255

Arg Pro Glu Thr Val Glu Thr Thr Val Thr Thr Ala Gln Glu Thr Lys  
 260 265 270

Arg Gly Arg Ile Gln Thr Lys Lys Glu Val Ser Ile Lys Thr Thr Leu  
 275 280 285

Lys Glu Leu Val His Lys Arg Val Thr Ser Pro Glu Asp Trp Met Met  
 290 295 300

Met Gln Pro Asp Ser Tyr Ile Glu Met Met Ala Gln Pro Gly Gly Glu  
 305 310 315 320

Asn Leu Leu Lys Asn Thr Leu Glu Ile Cys Thr Leu Thr Leu Ala Arg  
 325 330 335

Thr Lys Thr Ala Phe Asp Leu Ile Leu Glu Lys Ala Glu Thr Ser Lys  
 340 345 350

Leu Thr Asn Phe Ser Leu Pro Asp Thr Arg Ala Cys Arg Ile Phe Ala  
 355 360 365

Phe His Gly Trp Asn Tyr Val Lys Val Cys His Ala Ile Cys Cys Val  
 370 375 380

Leu Asn Arg Gln Gly Gly Lys Arg Asn Thr Val Leu Phe His Gly Pro  
 385 390 395 400

Ala Ser Thr Gly Lys Ser Ile Ile Ala Gln Ala Ile Ala Gln Ala Val  
 405 410 415

Gly Asn Val Gly Cys Tyr Asn Ala Ala Asn Val Asn Phe Pro Phe Asn  
 420 425 430

Asp Cys Thr Asn Lys Asn Leu Ile Trp Val Glu Glu Ala Gly Asn Phe  
 435 440 445

Gly Gln Gln Val Asn Gln Phe Lys Ala Ile Cys Ser Gly Gln Thr Ile  
 450 455 460

Arg Ile Asp Gln Lys Gly Lys Gly Ser Lys Gln Ile Glu Pro Thr Pro  
 465 470 475 480

Val Ile Met Thr Thr Asn Glu Asn Ile Thr Val Val Arg Ile Gly Cys  
 485 490 495

Glu Glu Arg Pro Glu His Thr Gln Pro Ile Arg Asp Arg Met Leu Asn  
 500 505 510

Ile His Leu Thr His His Leu Pro Gly Asp Phe Gly Leu Val Asp Lys  
 515 520 525

Asn Glu Trp Pro Met Ile Cys Ala Trp Leu Val Lys Asn Gly Tyr Gln  
 530 535 540

Ser Thr Met Ala Ser Tyr Cys Ala Lys Trp Gly Lys Val Pro Asp Trp  
 545 550 555 560

Ser Glu Asn Trp Ala Glu Pro Lys Val Pro Thr Pro Ile Asn Leu Leu  
 565 570 575

Gly Ser Ala Arg Ser Pro Phe Thr Thr Pro Lys Ser Thr Pro Leu Ser  
 580 585 590

Gln Asn Tyr Ala Leu Thr Pro Leu Ala Ser Asp Leu Glu Asp Leu Ala  
 595 600 605

Leu Glu Pro Trp Ser Thr Pro Asn Thr Pro Val Ala Gly Thr Ala Glu  
 610 615 620

Thr Gln Asn Thr Gly Glu Ala Gly Ser Lys Ala Cys Gln Asp Gly Gln  
 625 630 635 640

Leu Ser Pro Thr Trp Ser Glu Ile Glu Glu Asp Leu Arg Ala Cys Phe  
 645 650 655

Gly Ala Glu Pro Leu Lys Lys Asp Phe Ser Glu Pro Leu Asn Leu Asp  
 660 665 670

<210> 11

<211> 60

<212> DNA

<213> Part of Parvovirus NS1 Variant

<400> 11

atttgctgtg ttttaaacag acaaggaggc aaaagaaatg ctgttttatt tcatggacca 60

<210> 12  
 <211> 2019  
 <212> DNA  
 <213> Parvovirus NS1 Variant

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<400> 12  
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 gatatcggat ggaatagtta caaaaaagag ctgcaggagg acgagctgaa atctttacaa 180  
 cgaggagcgg aaactacttg ggaccaaagc gaggacatgg aatgggaaac cacagtggat 240  
 gaaatgacca aaaagcaagt attcattttt gattcttttg ttaaaaaatg tttatttgaa 300  
 gtgcttaaca caaagaatat atttcctggt gatgttaatt ggtttggtgca acatgaatgg 360  
 ggaaaagacc aaggctggca ctgccatgta ctaattggag gaaaggactt tagtcaagct 420  
 caagggaaat ggtggagaag gcaactaaat gtttactgga gcagatgggt ggtaacagcc 480  
 tgtaatgtgc aactaacacc agctgaaaga attaaactaa gagaaatagc agaagacaat 540  
 gagtgggtta ctctacttac ttataagcat aagcaaacca aaaaagacta taccaagtgt 600  
 gttctttttg gaaacatgat tgcttactat tttttaacta aaaagaaaat aagcactagt 660  
 ccaccaagag acggaggcta ttttcttagc agtgactctg gctggaaaac taacttttta 720  
 aaagaaggcg agcgccatct agtgagcaaa ctatacactg atgacatgcg gccagaaacg 780  
 gttgaaacca cagtaaccac tgcgcaggaa actaagcgcg gcagaattca aactaaaaaa 840  
 gaagtttcta ttaaaactac acttaaagag ctggtgcata aaagagtaac ctcaccagag 900  
 gactggatga tgatgcagcc agacagttac attgaaatga tggctcaacc aggtggagaa 960  
 aacctgctga aaaatacgct agagatttgt acactaactc tagccagaac caaaacagca 1020  
 tttgacttaa ttttagaaaa agctgaaacc agcaaaactaa ccaacttttc actgcctgac 1080  
 acaagaacct gcagaatttt tgcttttcat ggctggaact atgttaaagt ttgccatgct 1140  
 atttgctgtg ttttaaacag acaaggaggc aaaagaaatg ctgttttatt tcatggacca 1200  
 gccagcacag gcaaattctat tattgcacaa gccatagcac aagcagttgg caatgttggt 1260  
 tgctataatg cagccaatgt aaactttcca tttaatgact gtaccaacaa gaacttgatt 1320  
 tgggtagaag aagctggtaa ctttggacag caagtaaacc agtttaaagc catttgctct 1380  
 ggtcaaaacta ttcgcattga tcaaaaagga aaaggcagca aacagattga accaacacca 1440  
 gtcacatga ccacaaatga gaacattaca gtggtcagaa taggctgcga agaaagacca 1500  
 gaacacactc aaccaatcag agacagaatg cttaacattc atctaacaca taccttgctt 1560  
 ggtgactttg gtttggttga caaaaatgaa tggcccatga tttgtgcttg gttggtaaag 1620  
 aatggttacc aatctaccat ggcaagctac tgtgctaaat ggggcaaagt tcctgattgg 1680  
 tcagaaaact gggcggagcc aaagtgcca actcctataa atttactagg ttcggcacgc 1740  
 tcaccattca cgacaccgaa aagtacgcct ctacagcaga actatgcact aactccactt 1800  
 gcacgcgcatc tcgaggacct ggcttttagag ccttgagca caccaaatac tcctgttgcg 1860

ggcactgcag aaaccagaa cactggggaa gctggttcca aagcctgcca agatgggtcaa 1920  
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<210> 13  
 <211> 20  
 <212> PRT  
 <213> Part of Parvovirus NS1 Variant

<400> 13

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 1 5 10 15

Phe His Gly Pro  
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<210> 14  
 <211> 672  
 <212> PRT  
 <213> Parvovirus NS1 Variant

<400> 14

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Leu Lys Glu Lys Ser Asn Gln Glu Val Phe Ser Phe Val Phe Lys Asn  
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Glu Asn Val Gln Leu Asn Gly Lys Asp Ile Gly Trp Asn Ser Tyr Lys  
 35 40 45

Lys Glu Leu Gln Glu Asp Glu Leu Lys Ser Leu Gln Arg Gly Ala Glu  
 50 55 60

Thr Thr Trp Asp Gln Ser Glu Asp Met Glu Trp Glu Thr Thr Val Asp  
 65 70 75 80

Glu Met Thr Lys Lys Gln Val Phe Ile Phe Asp Ser Leu Val Lys Lys  
 85 90 95

Cys Leu Phe Glu Val Leu Asn Thr Lys Asn Ile Phe Pro Gly Asp Val  
 100 105 110

Asn Trp Phe Val Gln His Glu Trp Gly Lys Asp Gln Gly Trp His Cys  
 115 120 125

His Val Leu Ile Gly Gly Lys Asp Phe Ser Gln Ala Gln Gly Lys Trp  
 130 135 140

Trp Arg Arg Gln Leu Asn Val Tyr Trp Ser Arg Trp Leu Val Thr Ala  
 145 150 155 160

Cys Asn Val Gln Leu Thr Pro Ala Glu Arg Ile Lys Leu Arg Glu Ile  
 165 170 175

Ala Glu Asp Asn Glu Trp Val Thr Leu Leu Thr Tyr Lys His Lys Gln  
 180 185 190

Thr Lys Lys Asp Tyr Thr Lys Cys Val Leu Phe Gly Asn Met Ile Ala  
 195 200 205

Tyr Tyr Phe Leu Thr Lys Lys Lys Ile Ser Thr Ser Pro Pro Arg Asp  
 210 215 220

Gly Gly Tyr Phe Leu Ser Ser Asp Ser Gly Trp Lys Thr Asn Phe Leu  
 225 230 235 240

Lys Glu Gly Glu Arg His Leu Val Ser Lys Leu Tyr Thr Asp Asp Met  
 245 250 255

Arg Pro Glu Thr Val Glu Thr Thr Val Thr Thr Ala Gln Glu Thr Lys  
 260 265 270

Arg Gly Arg Ile Gln Thr Lys Lys Glu Val Ser Ile Lys Thr Thr Leu  
 275 280 285

Lys Glu Leu Val His Lys Arg Val Thr Ser Pro Glu Asp Trp Met Met  
 290 295 300

Met Gln Pro Asp Ser Tyr Ile Glu Met Met Ala Gln Pro Gly Gly Glu  
 305 310 315 320

Asn Leu Leu Lys Asn Thr Leu Glu Ile Cys Thr Leu Thr Leu Ala Arg  
 325 330 335

Thr Lys Thr Ala Phe Asp Leu Ile Leu Glu Lys Ala Glu Thr Ser Lys  
 340 345 350

Leu Thr Asn Phe Ser Leu Pro Asp Thr Arg Thr Cys Arg Ile Phe Ala  
 355 360 365

Phe His Gly Trp Asn Tyr Val Lys Val Cys His Ala Ile Cys Cys Val  
 370 375 380

Leu Asn Arg Gln Gly Gly Lys Arg Asn Ala Val Leu Phe His Gly Pro  
 385 390 395 400

Ala Ser Thr Gly Lys Ser Ile Ile Ala Gln Ala Ile Ala Gln Ala Val  
 405 410 415

Gly Asn Val Gly Cys Tyr Asn Ala Ala Asn Val Asn Phe Pro Phe Asn  
 420 425 430

Asp Cys Thr Asn Lys Asn Leu Ile Trp Val Glu Glu Ala Gly Asn Phe



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Gly Gln Gln Val Asn Gln Phe Lys Ala Ile Cys Ser Gly Gln Thr Ile
  450              455              460
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Arg Ile Asp Gln Lys Gly Lys Gly Ser Lys Gln Ile Glu Pro Thr Pro
465              470              475              480
Val Ile Met Thr Thr Asn Glu Asn Ile Thr Val Val Arg Ile Gly Cys
              485              490              495
Glu Glu Arg Pro Glu His Thr Gln Pro Ile Arg Asp Arg Met Leu Asn
              500              505              510
Ile His Leu Thr His His Leu Pro Gly Asp Phe Gly Leu Val Asp Lys
              515              520              525
Asn Glu Trp Pro Met Ile Cys Ala Trp Leu Val Lys Asn Gly Tyr Gln
              530              535              540
Ser Thr Met Ala Ser Tyr Cys Ala Lys Trp Gly Lys Val Pro Asp Trp
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Ser Glu Asn Trp Ala Glu Pro Lys Val Pro Thr Pro Ile Asn Leu Leu
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Gly Ser Ala Arg Ser Pro Phe Thr Thr Pro Lys Ser Thr Pro Leu Ser
              580              585              590
Gln Asn Tyr Ala Leu Thr Pro Leu Ala Ser Asp Leu Glu Asp Leu Ala
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Leu Glu Pro Trp Ser Thr Pro Asn Thr Pro Val Ala Gly Thr Ala Glu
              610              615              620
Thr Gln Asn Thr Gly Glu Ala Gly Ser Lys Ala Cys Gln Asp Gly Gln
625              630              635              640
Leu Ser Pro Thr Trp Ser Glu Ile Glu Glu Asp Leu Arg Ala Cys Phe
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Gly Ala Glu Pro Leu Lys Lys Asp Phe Ser Glu Pro Leu Asn Leu Asp
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<213> Part of Parvovirus NS1 Variant
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<211> 2019  
 <212> DNA  
 <213> Parvovirus NS1 Variant

<400> 16

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cgaggagcgg aaactacttg ggaccaaagc gaggacatgg aatgggaaac cacagtggat	240
gaaatgacca aaaagcaagt attcattttt gattcttttg ttaaaaaatg tttatttgaa	300
gtgcttaaca caaagaatat atttcctggt gatgttaatt ggtttgtgca acatgaatgg	360
ggaaaagacc aaggctggca ctgccatgta ctaattggag gaaaggactt tagtcaagct	420
caagggaat ggtggagaag gcaactaaat gtttactgga gcagatggtt ggtaacagcc	480
tgtaatgtgc aactaacacc agctgaaaga attaaactaa gagaaatagc agaagacaat	540
gagtgggtta ctctacttac ttataagcat aagcaaacca aaaaagacta taccaagtgt	600
gttctttttt gaaacatgat tgcttactat tttttaacta aaaagaaaat aagcactagt	660
ccaccaagag acggaggcta ttttcttagc agtgactctg gctggaaaac taacttttta	720
aaagaaggcg agcgccatct agtgagcaaa ctatacactg atgacatgcg gccagaaacg	780
gttgaaacca cagtaaccac tgcgcaggaa actaagcgcg gcagaattca aactaaaaaa	840
gaagtttcta ttaaaactac acttaaagag ctggtgcata aaagagtaac ctcaccagag	900
gactggatga tgatgcagcc agacagttac attgaaatga tggctcaacc aggtggagaa	960
aacctgctga aaaatacgtc agagatttgt acactaactc tagccagaac caaaacagca	1020
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ggcactgcag aaaccagaa cactggggaa gctggttcca aagcctgcc aagatggtcaa	1920

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<210> 17  
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 <212> PRT  
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<400> 17

Gly Gln Ala Ile Arg Ile Asp Gln Lys Gly Lys Gly Ser Lys Gln Ile  
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Glu Pro Thr Pro  
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<210> 18  
 <211> 672  
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 <213> Parvovirus NS1 Variant

<400> 18

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Leu Lys Glu Lys Ser Asn Gln Glu Val Phe Ser Phe Val Phe Lys Asn  
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Glu Asn Val Gln Leu Asn Gly Lys Asp Ile Gly Trp Asn Ser Tyr Lys  
 35 40 45

Lys Glu Leu Gln Glu Asp Glu Leu Lys Ser Leu Gln Arg Gly Ala Glu  
 50 55 60

Thr Thr Trp Asp Gln Ser Glu Asp Met Glu Trp Glu Thr Thr Val Asp  
 65 70 75 80

Glu Met Thr Lys Lys Gln Val Phe Ile Phe Asp Ser Leu Val Lys Lys  
 85 90 95

Cys Leu Phe Glu Val Leu Asn Thr Lys Asn Ile Phe Pro Gly Asp Val  
 100 105 110

Asn Trp Phe Val Gln His Glu Trp Gly Lys Asp Gln Gly Trp His Cys  
 115 120 125

His Val Leu Ile Gly Gly Lys Asp Phe Ser Gln Ala Gln Gly Lys Trp  
 130 135 140

Trp Arg Arg Gln Leu Asn Val Tyr Trp Ser Arg Trp Leu Val Thr Ala  
 145 150 155 160

Cys Asn Val Gln Leu Thr Pro Ala Glu Arg Ile Lys Leu Arg Glu Ile  
 165 170 175

Ala Glu Asp Asn Glu Trp Val Thr Leu Leu Thr Tyr Lys His Lys Gln  
 180 185 190

Thr Lys Lys Asp Tyr Thr Lys Cys Val Leu Phe Gly Asn Met Ile Ala  
 195 200 205

Tyr Tyr Phe Leu Thr Lys Lys Lys Ile Ser Thr Ser Pro Pro Arg Asp  
 210 215 220

Gly Gly Tyr Phe Leu Ser Ser Asp Ser Gly Trp Lys Thr Asn Phe Leu  
 225 230 235 240

Lys Glu Gly Glu Arg His Leu Val Ser Lys Leu Tyr Thr Asp Asp Met  
 245 250 255

Arg Pro Glu Thr Val Glu Thr Thr Val Thr Thr Ala Gln Glu Thr Lys  
 260 265 270

Arg Gly Arg Ile Gln Thr Lys Lys Glu Val Ser Ile Lys Thr Thr Leu  
 275 280 285

Lys Glu Leu Val His Lys Arg Val Thr Ser Pro Glu Asp Trp Met Met  
 290 295 300

Met Gln Pro Asp Ser Tyr Ile Glu Met Met Ala Gln Pro Gly Gly Glu  
 305 310 315 320

Asn Leu Leu Lys Asn Thr Leu Glu Ile Cys Thr Leu Thr Leu Ala Arg  
 325 330 335

Thr Lys Thr Ala Phe Asp Leu Ile Leu Glu Lys Ala Glu Thr Ser Lys  
 340 345 350

Leu Thr Asn Phe Ser Leu Pro Asp Thr Arg Thr Cys Arg Ile Phe Ala  
 355 360 365

Phe His Gly Trp Asn Tyr Val Lys Val Cys His Ala Ile Cys Cys Val  
 370 375 380

Leu Asn Arg Gln Gly Gly Lys Arg Asn Thr Val Leu Phe His Gly Pro  
 385 390 395 400

Ala Ser Thr Gly Lys Ser Ile Ile Ala Gln Ala Ile Ala Gln Ala Val  
 405 410 415

Gly Asn Val Gly Cys Tyr Asn Ala Ala Asn Val Asn Phe Pro Phe Asn  
 420 425 430

Asp Cys Thr Asn Lys Asn Leu Ile Trp Val Glu Glu Ala Gly Asn Phe  
 435 440 445

Gly Gln Gln Val Asn Gln Phe Lys Ala Ile Cys Ser Gly Gln Ala Ile  
 450 455 460

~~Arg Ile Asp Gln Lys Gly Lys Gly Ser Lys Gln Ile Glu Pro Thr Pro~~  
~~465 470 475 480~~

Val Ile Met Thr Thr Asn Glu Asn Ile Thr Val Val Arg Ile Gly Cys  
 485 490 495

Glu Glu Arg Pro Glu His Thr Gln Pro Ile Arg Asp Arg Met Leu Asn  
 500 505 510

Ile His Leu Thr His His Leu Pro Gly Asp Phe Gly Leu Val Asp Lys  
 515 520 525

Asn Glu Trp Pro Met Ile Cys Ala Trp Leu Val Lys Asn Gly Tyr Gln  
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Ser Thr Met Ala Ser Tyr Cys Ala Lys Trp Gly Lys Val Pro Asp Trp  
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Ser Glu Asn Trp Ala Glu Pro Lys Val Pro Thr Pro Ile Asn Leu Leu  
 565 570 575

Gly Ser Ala Arg Ser Pro Phe Thr Thr Pro Lys Ser Thr Pro Leu Ser  
 580 585 590

Gln Asn Tyr Ala Leu Thr Pro Leu Ala Ser Asp Leu Glu Asp Leu Ala  
 595 600 605

Leu Glu Pro Trp Ser Thr Pro Asn Thr Pro Val Ala Gly Thr Ala Glu  
 610 615 620

Thr Gln Asn Thr Gly Glu Ala Gly Ser Lys Ala Cys Gln Asp Gly Gln  
 625 630 635 640

Leu Ser Pro Thr Trp Ser Glu Ile Glu Glu Asp Leu Arg Ala Cys Phe  
 645 650 655

Gly Ala Glu Pro Leu Lys Lys Asp Phe Ser Glu Pro Leu Asn Leu Asp  
 660 665 670

This confirms receipt of:

~~Statement of Identity Under 27 C.F.R. §1.821 (f)~~

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Title:	PARVOVIRUS NS 1 VARIANTS
Date Mailed:	June 20, 2002
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Attorney Ref:	4121-136

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